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Emissions Compliance Solution Center



Milton



NESCAUM Project

- Retrofit Construction Equipment with EPA Verified Diesel Particulate Filters



Equipment List

- Caterpillar, Model 330C, Excavator
- Caterpillar, Model 345B, Excavator
- Caterpillar, Model 330D, Excavator
- Caterpillar, Model 980H, Loader
- Caterpillar, Model 988H, Loader



Engine List

- Model 330C, Cat, Tier 2, 247 hp, C9
- Model 345B, Cat, Tier 1, 290 hp, 3176
- Model 330D, Cat, Tier 3, 268 hp, C9
- Model 980H, Cat, Tier 3, 318 hp, C15
- Model 988H, Cat, Tier 3, 475 hp, C18



Partner

- R. S. Audley, Inc.
- 609 Route 3A
- Bow, NH 03306

- Contact: Les Leary
- 1-603-224-7724



Partner

- Alvin J. Coleman & Son,
Inc.
- 9 NH Route 113
- Conway, NH 03818

- Curtis Coleman
- 1-603-447-5936



Partner

- D W White Construction, Inc.
- 867 Middle Road
- Acushnet, MA 02743

- Meghan Hamilton
- 1-508-763-8868



Scope of Work

- Datalog the engines and confirm other verification requirements, install the DPF, install supports and monitoring system, make the necessary machine modifications and provide operator and maintenance training.



Technology

- All five engines were retrofitted with a Passive, CCRT, Diesel Particulate Filter manufactured by Johnson Matthey.



988H Loader

Dual DPFs required for engine HP



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988H Loader

- Dual DPFs with shield in place



Projected Reductions

- Model 330C, 247 hp, Excavator
- PM: .23 Tons over 4 years.
- CO: .4.08 Tons over 4 years.
- HC: 1.62 Tons over 4 years.



Projected Reductions

- Model 345B, 290 hp, Excavator
- PM: .73 Tons over 4 years.
- CO: 15.65 Tons over 4 years.
- HC: 1.90 Tons over 4 years.



Projected Reductions

- Model 330D, 268 hp, Excavator
- PM: .25 Tons over 4 years.
- CO: 4.42 Tons over 4 years.
- HC: 1.76 Tons over 4 years.



Projected Reductions

- Model 980H, 318 hp, Loader
- PM: .30 Tons over 4 years.
- CO: 5.25 Tons over 4 years.
- HC: 2.09 Tons over 4 years.



Projected Reductions

- Model 988H, 475 hp, Loader
- PM: .45 Tons over 4 years.
- CO: 7.84 Tons over 4 years.
- HC: 3.12 Tons over 4 years.



Partner Feedback

- Machine operators have noticed that the exhaust is visibly cleaner after retrofit.
- Overall review of the retrofitted equipment by the owners is good.



Operational Issues

- Any fault codes have been limited to sensor malfunctions.
- Problems related to partial filter plugging have been related to low engine exhaust heat caused by light machine duty cycle.
- None of the filters have required manual cleaning.



Maintenance

- Due to the presence of sensors and lines that are required with Diesel Particulate Filters and their monitors it is necessary for maintenance personnel to periodically inspect their position and integrity.



Filter Cleaning

- The need for manual filter cleaning will be directly related to the duty cycle of the machine. Therefore the type of work the machine is performing will greatly impact the interval which could be as high as several thousand hours.



Pre and Post Fuel Penalty

- A review of the machines indicate that on average the installation of a Diesel Particulate Filter has increased the fuel consumption by less than 1.0%.



Lessons Learned

- The successful operation of construction equipment that has been retrofitted with a Level 3 emissions reduction device (DPF) is dependant on both operator and maintenance training.
- Milton Cat believes our training and outreach programs remain key to successful installations.

